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EXAMINING THE BENEFITS OF USING CURRENT HEALTH AND WELLNESS
PHILOSOPHIES TO IMPROVE SERVICE MEMBERS' HEALTH AND FITNESS AND
ALLEVIATE RISING DoD HEALTHCARE COSTS

by

Thomas M. Gallagher, Major, USAF

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Proposal Adviser: Dr. Patricia Lessane

Project Advisor: Dr. Gregory F. Intoccia

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ABSTRACT

The purpose of this paper is to establish a modernized U.S. military wide fitness program that produces a healthier Service member and results in lower Department of Defense (DoD) spending regarding healthcare and retention. In addition, this paper intends to discuss important nutrition and methods that will help to maximize fitness and health. To justify the recommendation of a modernized Service-wide fitness program, a problem and solution framework is used to analyze proper nutrition and required activities in order to determine the most effective fitness policy.

This paper finds that too few Service members are engaged in long-term fitness maintenance programs that could increase their respective health and strength. Nutrition and fitness are not addressed in any of the Service's current fitness program policies, and there are no existing fitness program policies that improve on earlier ones based on antiquated calisthenics based exercises. In addition, this paper finds that by enacting a Service-wide fitness program that incorporates modern nutritional, fitness and technological innovations the DoD can realize cost savings through healthier Service members.

This paper recommends integrating the fitness tracker device *fitbit* into all Service member's daily activities. In addition, stronger and healthier Service members will be less likely to incur injuries and be better prepared to perform required duties.

INTRODUCTION

Healthcare costs in the United States continue to soar, and place imbalanced financial burdens on both private business and individual citizens. The U.S. government, like other major employers must grapple with these costs. The United States government provides health insurance to 2.3 million eligible active and reserve military personnel.¹ This sizable obligation accounts for a large portion of the DoD annual budget, constituting nearly 9.5 percent.²

Healthcare is a required program, essential to employee's compensation benefits, and part of the cost of employing a capable workforce. In 2013, the Congressional Budget Office estimated the DoD's healthcare spending budget, for active duty service members, at \$52 Billion.³ From 2000-2012 costs increased 130 percent as a result of the mobilization and realized actions in Iraq and Afghanistan.⁴ In 2016 the government accounting office documented the rising costs of active duty, reserve and retiree health care programs, and specifically cited data indicating the DoD's TRICARE program would need changes in order to meet constraints incorporated into the DoD allocated budget.⁵

The active duty Service member is subjected to long working hours and demanding work environments. Each Service member performs duties that are vital to the nation's military success. These duties are unique and create high stress situations due to deployments, irregular working hours and relocations.⁶ These factors effect mental health and have the potential influence physical fitness regimens, diet and nutrition.⁷ In 2008, 60 percent of male and 40 percent of female active duty personnel were listed as being overweight, categorized as a body mass index (BMI) of over 26 percent.⁸ The *President's Council on Fitness* officially cites risk factors for adult chronic diseases, like hypertension and type 2 diabetes, are increasing and being documented at younger ages.⁹ Higher stress, decreased fitness and increased obesity, as a result

of increased operational demands, is not being remedied by the existing military fitness and wellness program.

Today each separate Service branch mandates a fitness program that was developed from a 1920s 'Individual Efficiency Test' and evolved in 1944 to a more calisthenics based approach to measuring physical fitness.¹⁰ The current run, sit-up, push-up and pull-up style fitness test was developed in 1980, and has been slightly modified and adapted for each individual service. However, such modifications have never included a look at improving or evaluating the overall health and wellness of the service member. Unfortunately, the testing procedures are designed so that a "snapshot" of an individual's ability to complete basic calisthenics is recorded on one day of the year. Service member's who are able to pass the evaluation go forward with their daily jobs with no further need to build upon their overall wellness or fitness. Individuals who are unable to pass the fitness evaluation are referred to a remediation program, that is established to bring the individual back to a snapshot passing level. The overall goal of the fitness program is to maintain a healthy and fit force that is ready to deploy anywhere in the world. This paper will investigate the following question:

What type of comprehensive fitness program is required to overhaul and replace each individual Service's program, transforming it into a "Military Standard" fitness program, which will, across the Services, promote nutrition, monitor individual progress, healthy living and wellness, and result in a reduction of DoD healthcare cost outlays related to healthcare spending and retention?

A modernized fitness program should incorporate a comprehensive combination of fitness and nutrition which will include modern total body strength techniques and the use of technology to incentivize wellness. By tracking daily goals of calories, exercise and regular

healthcare visits Service members will be able to take charge of their fitness and health. Service members would be assisted by established informative eating recommendations, focusing on nutrition and accompanied by a revitalized dining hall (DFAC) menu. By integrating modern nutrition methodology and physical fitness techniques into a mandated program, the average Service member can maintain a healthy lifestyle and reduce DoD based healthcare costs and increase retention.

The current fitness and evaluation process and policy of the U.S. military is founded on antiquated fitness theory and testing methods. The program fails to test or gauge an individual's level of health and wellness, and produces data that falsely represents the physical readiness of the military as a joint force. At an average of \$330,342 per Service member to train, the military relies upon retaining qualified personnel to prevent excessive training costs.¹¹ In 2010, 81,168 Service members, or 5.3 percent of active duty Service members received a clinical diagnosis of overweight or obese.¹² In 2012, the Army discharged over 1,600 active duty Service members for fitness testing and standards failures.¹³ This project will argue that a comprehensive and standardized program needs to be developed, that can be mandated across Services and would produce accurate data reflecting health and wellness. The program would have to be flexible and be able to be adapted by each individual to establish results.¹⁴

Integrating a newly developed Service-wide mandated fitness program would focus upon the aspects of daily living, backed up by modern fitness and nutrition experts. These modern philosophies would establish continuity in habitual nutrition and exercise, rather than extremes that can sometimes be found in crash diets or unsustainable intense physical programs.

Establishing a continuity based program of fitness, wellness and nutrition will also incorporate the use of technology. Utilizing the features offered by modern technological devices

will allow individuals to become personally invested in tracking personal fitness and wellness goals of the program.¹⁵ This type of cooperative program is drastically different from the current calisthenics based fitness program that exists today.

Ultimately, by establishing a mandated program that rewards Service member's for achieving fitness and wellness goals, productivity should increase, injuries would decrease and a measurable cost savings would be realized by DoD financial healthcare budgeting.

This project will examine a problem/solution framework methodology, where intensive research based on intellectual investigation will explore the cause and effect relationship of health care costs and healthy living lifestyles.¹⁶ The project will focus on resolving rising healthcare spending and the expectation of a healthy and deployable military Service member.¹⁷ The goal is to create a Service wide military mandated program that encapsulates the fundamentals of fitness, nutrition and establishes a wellness plan that equates into healthcare savings.

This paper begins by detailing the current healthcare costs, associated with the DoD budget. Examining the trend of rising healthcare costs reveals the need to make changes to existing policy in order to provide results in the form of reduced healthcare spending and costs. Then, the paper details the the private sector's attempts to involve employees in managing their own ability to improve their health. The private sector's health and wellness plans suggest potential DoD healthcare savings by incorporating similar Service member solutions.

Next, each Service branch's fitness programs are examined in order to show similarities and differences in the programs. This analysis presents how each individual Service branch's

existing fitness programs attempt to gauge a quantifiable fitness level for active duty personnel, but fails to truly capture any baseline of health or wellness.

The paper includes a discussion on how the capability of the *fitbit* fitness tracking device can instill a positive emotional and physical effect to a modernized fitness program. In addition, an Army study is analyzed to demonstrate the potential benefits from incorporating daily nutritional tracking and exercise into the Service member's daily routine. Then, modern nutritional and fitness theory are presented to compare and contrast the existing Service fitness programs that focus on calisthenics developed from the early 1900's.¹⁸ Finally, recommendations will be made in an effort to inform the DoD of the most effective service-wide fitness program, developed through the use modern theory and technology, to produce fitness and nutrition programs that better enable the average Service member to achieve a healthier lifestyle.

To ensure that the project's question is fully satisfied, a new physical fitness regimen must be identified and defined. The project will explore current private sector initiatives that have shown positive results in lowering healthcare costs and improving worker's health. By modeling private sector success, the military can develop a mandated program that can realize a new military fitness strategy that targets daily progress while setting realistic goals that are achievable over longer durations. Combining nutritional philosophies and scientific studies with fitness regimes will structure a philosophy and exercise regimen as the core of a modernized fitness policy. This will further correlate the established data to a solution tailored towards a program best suited to established military practices.

BACKGROUND

US Healthcare Costs

Healthcare is expensive, and the Department of Defense (DoD) continues to face scrutiny as Congress focuses on budgetary constraints and national deficits. There is a direct relationship between reducing budgetary costs when examining healthcare expenses and the overall health of the individuals being covered by the healthcare policies.¹⁹ The reality of healthcare spending can be established in data provided by governmental agencies. The Centers for Disease Control and Prevention (CDC) describe 2013 national healthcare expenditures as \$2.9 trillion, equating this to a per capital expenditure of \$9,255.²⁰ Per capita income is the gross domestic product divided by midyear population, and in the United States (US) this equates to \$48,374.²¹ Comparing expenditures on healthcare to household income shows a 19 percent burden to the average household.²² In a 2011 study, The Centers for Medicare and Medicaid Spending projects 2022 increased cumulative healthcare spending at \$621 billion. The average American does not possess the means to sustain this burden, and solutions are required reduce spending. The government has realized the rising trend of healthcare spending, and has addressed the need for reform.

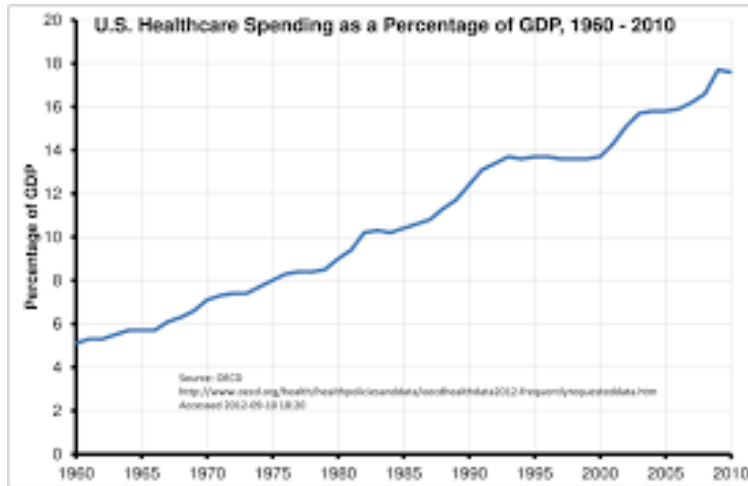


Figure 1. US Healthcare Spending²³

In 2010, Congress enacted the Patient Protection and Affordable Care Act in order to increase the number of Americans covered by health insurance and decrease the cost of health care.²⁴ Healthcare costs have become a forefront issue, in the national debate, as corporations and the government attempt to enact policy attempting to reduce expected cost increases. The Affordable Care Act mandated health insurance be available to every American.²⁵ The enactment of lawful legislation, validated by the Supreme Court, exemplifies the fact that a problem exists between the relationship of healthcare affordability and the average American.

The Affordable Care Act has been created to address the need for a focus on wellness and nutrition to increase overall health and reduce the need for emergency and acute care for preventable issues. By defining the terms of a problem and solution, the government has acknowledged and implemented a solution to improve health and wellness. The Affordable Care Act directs national prevention and health promotion strategy, incorporating the most effective

and achievable methods to improve the health status of Americans and reduce the incidence of preventable illness and disability.²⁶

The DoD has taken initiatives to realize the potential for healthy living and cost savings, by initiating ‘Operation Live Well’, which utilizes the blogger website “DoD Live” and www.health.mil. Both of these online resources incorporate health and wellness tools of nutrition, stress reduction, sleep and exercise. However, the DoD continues to break down programs into Service specific guidance, that is then managed by each service branch. Links are provided to each individual service branch, but defeats the DoD purpose of a single source site for healthy living and wellness resource.

Budgetary Constraints

As the War on Terrorism has devolved away from the wars in Iraq and Afghanistan, the government has faced increased scrutiny involving the DoD budget. The U.S. Congress enacted sweeping governmental financial reform, in the face of increasing deficits and the 2008 Great Recession.²⁷ In 2013, Congress was unable to enact budget legislation, which triggered automatic government spending cuts aimed at reducing national deficits.²⁸ While the sequestration was a Congressional political tactic, it lends relevance to the increasing focus on past, present and future government spending; specifically, DoD spending. While the government has defined the problem as “spending”, the dilemma rests more upon what costs are creating the need for the spending.

In fiscal year 2008 there were 187,900 combat troops deployed in Afghanistan and Iraq, not including those Service members forward deployed on support ships and surround bases in

the Middle East.²⁹ In 2009, The Government Accounting Office (GAO) estimated the annual cost of maintenance and replacement of Army personnel and equipment at twelve billion dollars.³⁰ Having a force that is consistently preparing for and participating in regular physical fitness activities is a simple and easy way to make a targeted effort at reducing costs when related to deploying personnel.

Private Sector Health and Wellness

By targeting lifestyle type changes and integrating disease management programs, private sector business has been able to realize positive cost savings. Common wellness programs have two components: a disease management program and a lifestyle management program.³¹ The disease management program focuses on health risk management, such as smoking obesity and supports individuals through education, information and regular medical visits.³² The military maintains similar programs involving tobacco cessation and risk factors for major health related diseases.³³ The second portion of the wellness program, lifestyle management, involves targeting daily activities, specifically fitness and nutrition.³⁴

Current private sector trends allow the employee to select a health and wellness plan that offers rewards for making healthier life choices, saving the company and employee money.³⁵ These packages allow the individual to select a plan that best suits their personal healthcare needs, while also allowing the individual to realize increased savings based on routine healthcare practices and healthy living strategies.³⁶ Developing a cost sharing program has evolved in the private sector, and incorporating such a program into the government healthcare system is not entirely feasible. However, there are aspects to such programs that allow individuals to take personal command of their individual health, reducing the need for medical services and

procedures and thus passing real cost savings on to program providers.³⁷ Establishing, extracting and incorporating the programs, that are proven to produce results, into governmental programs and Service member's lives will pass those cost savings into the DoD annual budget.

Private sector business must encourage maximum employee participation to realize positive results. Positive results are defined as reduced use of sick time, higher daily attendance and increased productivity.³⁸ Jetblue Airways utilizes a 'Healthy Rewards Account', that is established to reward employee's with up to \$800 for participation in gym memberships, flu shot or fitness event (marathon, 'Tough Mudder', 5K or 10K road race).³⁹ Rewarding employees for participation incentivizes the action of healthy living and increases the potential savings from employees leading healthier lives.⁴⁰ Providing a monetary incentive to employees provides the incentive for participation in wellness programs. Engaging employees to achieve fundamental behavior change can only be achieved with maximum participation.⁴¹

Active duty Service member's retention is closely monitored by DoD analysts in regards to costs and training. Analysts struggle to break away from a repeating cycle of morale and retention issues that stem from relentless demand and high-pressure 24/7 operations.⁴² Service members are continually subjected to stressful events including deployments and relocations. The average active duty Service member will relocate six times, over the course of a basic tour, and average three deployments.⁴³ This type of stress is incurred by family members and the Service member. These types of major lifestyle changes are a part of the military life, and contribute to the retention loss due to failed fitness tests and the lack of lifestyle wellness.⁴⁴

Technology and Fitness Tracking

Today's health and wellness programs are largely assisted through the use of technology including *I-Watch*, *fitbit* and GPS based products. John Hancock employees receive a *fitbit* as part of its healthy rewards enrollment benefits package.⁴⁵ Wellness programs benefit both the company and individual participating, as the integration of Fitness tracking devices provide the user a social motivation while integrating technological products into increased participation in exercise, nutrition and tracking daily activities.⁴⁶

By incorporating wearable electronic fitness devices, that are both socially acceptable and beneficial to tracking real-time health and fitness data, the military would gain the ability to monitor Service member participation. The data provided would be essential to establishing a fitness and wellness program that succeeds in improving productivity and *deployability* of Service members. The health and fitness industry, in the US, is estimated to generate between \$40 and \$50 billion, as Americans purchase gym memberships, join weight loss groups and purchase home delivery nutrition and meal plans.⁴⁷ The amount of spending has produced a market that has driven the development of technological products that integrate with media devices, cell phones and computers.

The first *I-Watch* model features programmable fitness tracking to measure workouts through GPS location tracking, bio-metric logging, a stop watch, and data link.⁴⁸ *CNBC* estimates that *Apple* has US sales approaching 7.5 million *iWatch* units in 2015.⁴⁹ *Apple* specifically targets the health and fitness market by marketing the *I-Watch* as daily tracker that can show long-term fitness results.⁵⁰ The *Apple I-Watch* targets daily activities, and places emphasis on the user's ability to gain encouragement from realizing daily progress and setting future goals in increase the amount of performed activity.⁵¹

Another fast selling and more economical technological fitness tracking device is the

fitbit. This also offers a more cost effective solution, that maintains the ability to track fitness data while also incorporating a social motivation for improving overall health. The *fitbit* corporation markets itself as a team dedicated to health and fitness that builds products to help transform people's lives.⁵² The device does not have as many technological integration features when compared to the *I-Watch*, however offers a retail per unit cost savings of up to \$150.⁵³ The purpose of incorporating a modified fitness program is to reduce costs, and focusing upon the cost of implementation is certainly a consideration. The DoD would need to choose the most cost effective fitness tracking device that would also best present a wearable technology to encourage users to make a sustainable shift toward a healthier and more fulfilling lifestyle.⁵⁴ Sales of both *I-Watch* and *fitbit* comprise almost 50 percent of the market pertaining to personal electronic fitness tracking products.

TRACKING WEARABLES					
Top five wearables vendors, shipments, market share and year-over-year growth, Q2 2015 (units in millions)					
Vendor	2Q15 shipment volume	2Q15 market share (%)	2Q14 shipment volume	2Q14 market share (%)	2Q15/2Q14 growth (%)
Fitbit	4.4	24.3	1.7	30.4	158.8
Apple	3.6	19.9	—	0.0	—
Xiaomi	3.1	17.1	—	0.0	—
Garmin	0.7	3.9	0.5	8.9	40.0
Samsung	0.6	3.3	0.8	14.3	-25.0
Others	5.7	31.5	2.6	46.4	119.2
Total	18.1	100.0	5.6	100.0	223.2
Source: IDC					

Figure 2. *I-Watch* and *fitbit* sales.

Fitness tracking devices have been developed and designed to maximize the user's participation. Utilizing a fitness tracking device would provide an additional incentive for Service member participation and success in the fitness program. that can be included in modified military fitness and wellness program.

CURRENT MILITARY FITNESS PROGRAM

Air Force, Army, Marine Corps and Navy.

The individual Service Branches currently maintain and administer separate fitness programs, but would greatly benefit from Service-wide program that modernizes procedures, standards and exercises to best measure and maintain the overall fitness of the military force. Because the military Service Branches sanction individual Service fitness programs that are aimed at achieving a fitness and health standard, a modernized and mandated Service-wide fitness and wellness program could easily be implemented. To test health and wellness, the Service branch enacts a fitness program that is established to set physical standards, to which Service members must achieve satisfactory results. Eliminating the need for individual Service's to administer and maintain separate fitness programs, enables the Service-wide program the ability to reduce procedural redundancy, save time by reducing the amount of testing elements, and standardizes a fitness policy that would produce data that reflects the true fitness of active duty personnel.

The standards set forth by each individual Service maintain similarities in push-ups, runs and sit-ups, but deviate from times, distances and minimums required. The Air Force incorporates a waist circumference measurement to measure body composition, while the

remaining Services use a height and weight body mass index (BMI) standard.⁵⁵ The Army and Marine Corps require a two minute push-up, two minute sit-up, pull-up count and three mile run, while the Air Force limits push-ups and sit-ups to one minute.^{56 57} The Navy fitness test includes a one and a half mile run, but also sets standards for an optional 500 yard timed swim event.⁵⁸ The differences in actual testing procedures, calisthenics and cardio events are minimal, and are not targeted towards testing a specific physical requirement of the Service branch. Because the overall need and goal of each branch is maintaining a minimum measured fitness goal, the testing procedures and requirements can be molded into one single mandated policy.

Army 'Fueling Initiative Program Evaluation'

In 2013, a group of Army doctors compiled a study of over 14,000 Army soldiers to analyze the relationship between nutritious eating and regular exercise, and how this relationship effected workplace performance.⁵⁹ The results directly correlate healthy living with passing fitness scores and increased workplace productivity. The members of the study who regularly followed a 'Healthy Eating Score' (HES) of '5' showed decreased insomnia and increased emotional, familial, social and spiritual human psychological factors.^{60 61} The HES was determined by participants tracking and reporting daily nutritional intake and then scoring what they ate into a calculable number.⁶² The study documents the relationship between the data proving that the adherence to nutrition is directly relevant to performance including sleep quality (duration), cognitive performance, social health and mood.⁶³

Nutrition is a key player in the success of a wellness policy and comprehensive plan. The Army study followed a nutritional grouping similar to the US Department of Agriculture

(USDA) food pyramid grouping, yet added factors that are known to modern nutritionists, like Omega-3, to provide additional categories for the participants.⁶⁴

Table 1. Healthy Eating Score-5.

Over the last 30 days, how often did you eat/drink the following foods/beverages? (Note: Only a few examples of each category are listed to remind you of the types of foods—many more are possible.)	3 or More Times per Day	Twice per Day	Once per Day	3 to 6 Times per Week	1 or 2 Times per Week	Rarely or Never
FRUIT: fresh, frozen, canned or dried, or 100% fruit juices	5	4	3	2	1	0
VEGETABLES: fresh, frozen, canned, cooked or raw: dark green vegetables (broccoli, spinach, most greens), orange vegetables (carrots, sweet potatoes, winter squash, pumpkin), legumes (dry beans, chick peas, tofu), starchy vegetables (corn, white potatoes, green peas), and other (tomatoes, cabbage, celery, cucumber, lettuce, onions, peppers, green beans, cauliflower, mushrooms, summer squash, etc)	5	4	3	2	1	0
WHOLE GRAINS: rye, whole-wheat, or heavily seeded bread; brown or wild rice; whole-wheat pasta or crackers; oatmeal; corn tacos	5	4	3	2	1	0
DAIRY: regular/whole fat milk; low- or reduced-fat milk (2%, 1%, 0.5% or skim), yogurt, cottage cheese, low-fat cheese, frozen low-fat yogurt, soy milk, or other calcium-fortified foods (orange juice, soy/rice milk, breakfast cereals, etc)	5	4	3	2	1	0
FISH: tuna, salmon, or other nonfried fish	5	5	5	5	3	0

Note. Questions and scoring that comprise the Healthy Eating Score-5. Scores were totaled for a range of 0 to 25.

Figure 3. Healthy Eating Score

Physical exercise is required to maintain strength and aptitude to operate in physically demanding positions including forward deployed locations and combat operations. The Army study tracked increased strength, cardio aptitude and passing fitness scores, which showed positive correlation with those members of the study who were reporting higher numbers of the measured HES.⁶⁵ The participants showing the greatest improvement in strength, cardio and passing fitness test scores were also reporting the highest level of nutritional eating on the HES table.⁶⁶ The study concluded that an optimized nutritional plan and regular fitness is a combination that supports positive results.

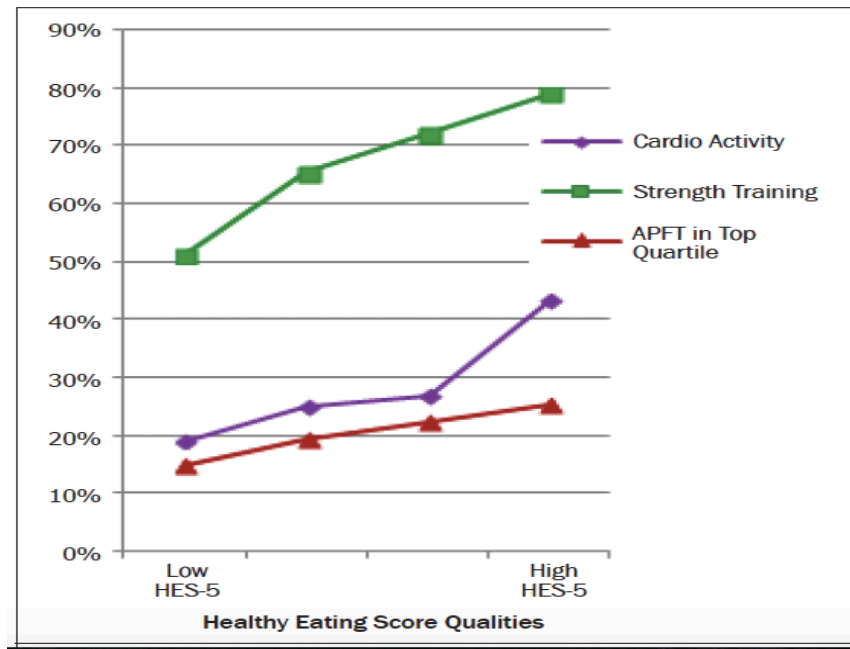


Figure 4. HES-5 and Increased Fitness

The data also supports an increased in productivity, as sleep and mood improvements were documented from participants who completed higher levels of HES. Sleep and mood is correlated to increased worker productivity and is a positive side effect to healthy living.⁶⁷ Participants measured their social, emotional and spiritual relationships through the ‘Global Assessment Tool,’ which is a survey incorporated into the Army’s Comprehensive Fitness Program aimed at measuring mind and body health.⁶⁸ Sleep and mood were determined to also be a part of wellness.⁶⁹ By following healthy nutrition and incorporating regular fitness into daily living, higher levels of productivity can be achieved along with the added benefit of increased social and spiritual interaction.⁷⁰

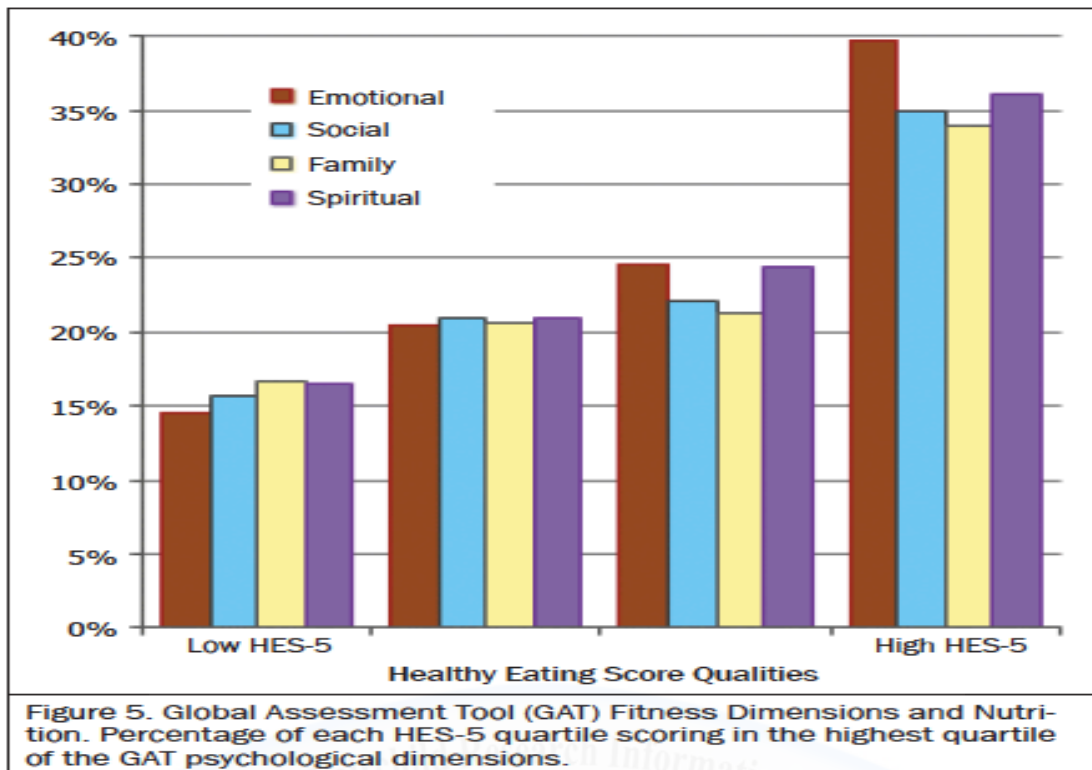


Figure 5. HES and Psychological Benefits⁷¹

This study's success was based on volunteer reporting and tracking, demonstrating positive results without the use of a mandated program or electronic fitness devices. Providing these added measures would potentially enhance further success when combined with nutritional guidance, a regular wellness plan and the ability to measure data from electronic tracking. The study's ability to present direct evidence of nutrition, exercise and fitness towards healthier living is not surprising.

However, the study is critical to supporting a mandated fitness policy, as the participants were active duty Army personnel, who are subjected to a higher level of physical fitness and greater work capacity than the civilian population to a different lifestyle and career expectation than the average private citizen.⁷² This is where a mandated program, encompassing all Services', would target the average active duty Service member and provide the factors to

improve daily living and career success.

FITNESS, NUTRITION AND WELLNESS

Today's society lends itself towards a fitness conscious lifestyle, that includes nutrition, exercise and overall wellness. Americans spend more than \$60 billion annually to try to lose weight, on everything from paying for gym memberships, following weight-loss programs or drinking diet soda.⁷³ Scientific evidence and reliable sources of nutritional and fitness information exist for individuals to gain the knowledge on how to maintain healthy lifestyles.⁷⁴ Motivating individuals to participate in healthy living is required to support the knowledge. The motivation can originate from financial rewards (via healthcare rewards programs), personal electronic devices (*fitbit*, *I-Watch*) and competitive employment opportunities (Special Forces, Fitness Test, Contests). These types of motivational programs could be incorporated into the military fitness program to influence healthier living by all Service members.

In a 2000 study by Human Systems Information Analysis Center, located at Wright Patterson AFB, documented the relationship between between a lifestyle of physical activity and fitness, general health and wellness and quality of life.⁷⁵ The report further emphasized the benefits of healthy living to include increased life span, quality of life and reduced mortality as a result from an active and fit lifestyle.⁷⁶ A key correlation of data from the study connects the benefits of healthy living to decreased risk of injury and the deployability of the military profession.⁷⁷ What can be further highlighted from the scientific data extrapolated by the report is the possibility that such increases in performance and health can be quantified with a cost savings in terms of reduced healthcare and medical needs. Reducing visits to healthcare professionals reduces costs, while also increases daily work productivity.

Nutrition and Wellness

A major part of achieving a well balanced and whole life approach to health and wellness is through proper daily nutrition. This doesn't mean that the average Service member must adhere to a regimented mandatory diet, but employing a total fitness and wellness program will need to include a nutritional guide to round out a program that involves daily living. The average US college student leads a life that parallels the US Service member in regards to sleep, study and work hours.⁷⁸ To assist students living a college lifestyle, tending to study and socialize during irregular hours and depend on dining hall nutrition, the US Department of Agriculture (USDA) has developed dietary guidelines for college students.⁷⁹ Active duty Service members live similar irregular lives and also depend on dining hall or limited nutrition food options.⁸⁰ A USDA study showed when college students are presented with menu option choices prior to entering the dining facility, the students selected more nutrition food.⁸¹ Menu selections were broken down by vegetables, meats and sides and did include more popular options such as mashed potatoes and low calorie gravy.⁸² Pre-selection menus could be established by posting, online, dining facilities menus as well as calorie counts.

Daily living that achieves a complete health and wellness aspect to each Service member's lives is the goal of the improved fitness program, and finding long-term goals can only be achieved through daily exercise (fitness), diet (nutrition) and wellness (daily monitoring, regular check-ups, goals and competitions, participation). McChord Air Force Base's dining facility incorporates more nutritious options including, whole grain breads, fat-free milk, 100 percent fruit juice, low-calorie Gatorade, grilled chicken, fat-free salad dressing and yogurt.⁸³ A mandatory fitness program that incorporated nutrition into all dining facilities, and specifically

concentrated on forward deployed facilities, would provide the Service member the opportunity to achieve success in high stress high tempo locations.

Figuring out what to eat, especially during a typically demanding active duty Service member's day, becomes a key element to engaging in a healthy diet. Nutritionist and diet expert, Michael Pollan contrasts the benefits of being an omnivore as being the ability to eat many things in nature. The curse of the omnivore is the difficulty in determining which of these things are healthy.⁸⁴ The reality of busy lifestyles presents the difficulty of finding time to eat, and more importantly eating food that provides elements that are required for proper nutrition.

Food is an ever present part of daily living, as consumers must make decisions regarding what to eat in terms of nutrition and cost. The average American supermarket contains 165,000 square feet of retail space, while also incorporating 225,000 different food products.⁸⁵ With thousands of choices of food to consume, the question then becomes how does the average American make nutritious choices? The average Service member faces the same food choice selections, but can optimize nutritious selections when influenced by a fitness program that provides the correct guidance and education towards making healthy choices.

The key to achieving success in a nutritional program lies in making it a long-term lifestyle program that realizes slow but positive progress. The current nutritional guidelines provide guidance in eating foods that correlate to the government's pyramid based diet.⁸⁶ The US Department of Agriculture (USDA) developed the original food pyramid in 1917, that suggested incorporating fish, milk and meat, vegetables and fruit, cereals and sugar into the average American's diet.⁸⁷ The pyramid was unveiled with the label 'recommended daily allowances' (RDA).⁸⁸ The USDA intended the pyramid to provide nutritional guidance to the

American people, as the farming industry gained the ability, through better transportation mediums, to supply a larger amount of the countries food supply needs.⁸⁹ Over the course of the next 75 years the pyramid received minor upgrades to its present form released in 1992. The existing problem in the food pyramid, is that over the course of 75 years of advanced science and nutritional study, the pyramid is still basically comprised of the same elements. The pyramid lacks direction in how it influences grains and rice, yet limits oils and fats.⁹⁰ Modern science, through nutritional studies, have provided more clarification on how types of food and the way grains, oils and fats influence the absorption of nutrients which are essential to healthy living.⁹¹ The pyramid could lead a cholesterol conscious eater into an overweight condition by consuming excessive carbohydrates and avoiding soluble fats.⁹² By incorporating foods, that are both nutritious and reasonably available to the average Service member, a diet and lifestyle of healthy living can be achieved to increase wellness.



Figure 6. USDA Food Pyramid⁹³

Including modern scientific research and nutritional expert's philosophies into a fitness program would provide Service members the appropriate guidance to develop a diet and lifestyle nutrition goals. Nutritionists focus on factors that can be changed in a person's life. Lifestyle habits are especially important and there are psychological ramifications that effect eating, willpower and guilt.⁹⁴ The military Service member is subjected to complicated work and living situations, and the member's success in diet and nutrition has to be based on continuity.⁹⁵ Consuming the recommended elements of the USDA food pyramid is not necessarily incorrect, yet the pyramid leaves the consumer to guess the proper manner to combine eating the proper elements into a balanced daily living. Consuming only spinach and carrots for a month is just as unattainable as running a marathon after a week's worth of training.⁹⁶ Nutritionist Michael Pollan suggests to include portion control in everyday diet selections, but to ensure consuming calories in relation to the amount of daily activities.⁹⁷ Pollan further suggests to consume more vegetable than meat.⁹⁸ Pollan's philosophy is one of moderation and making more balanced food choices that establish a long-term psychology towards diet and nutrition.⁹⁹

The psychology of eating is part of nutrition, as the conscious guides the individual to consume the appropriate foods that balances eating available foods with lifestyle constraints involving stress and family.¹⁰⁰ This balance has to be achieved without placing additional stress by introducing an unachievable diet plan. Eating is both a necessity to sustain life and an integral part of societal interaction. Emotions are closely related to food and how others judge what people around them consume, in a psychological effect called 'framing'.¹⁰¹ 'Framing' also involves how food is verbally described to others in order to create positive or negative

connotations.¹⁰² In the same manner that offering menu items that are balanced and nutritious, A modernized fitness plan would place attention towards ‘framing’ nutritional choices. This would remove negative psychological effects associated with eating, so Service members could find satisfaction when making nutritional eating choices. This becomes particularly important as the Service member performs in a high stress and tempo occupation.¹⁰³ The military occupation puts additional stressors on the Service member when faced with making nutrition choices in forward deployed locations.

Nutrition is an ingredient, or puzzle piece, that fits into a total wellness package. Dr. Darya Rose, board certified nutritionist and author, developed *healthstyle* in order to define a nutritional and living philosophy based on the idea of a mentality towards eating, diet flexibility and adapting to different environments.¹⁰⁴ Nutrition becomes more of a *healthstyle* that places emphasis on a cumulative effect between food consumed, exercise performed and daily living environment.¹⁰⁵ Borrowing the *healthstyle* philosophy and fitting it into a military health and wellness program is appropriate, as the military Service member is constantly subjected to variables that could be managed by implementing the *healthstyle* philosophy. In this case the military Service member could implement *healthstyle* as a way to adapt to the different phases of operational tempo, including home cycle living and forward deployed operations.

The *healthstyle* philosophy incorporates current nutritional ideology, that could be integrated into dining facilities (DFACs) globally. The modified fitness program would include a formal Service wide campaign to present better awareness and integration of nutrition into Service members daily lives. The Army currently employs a great deal of nutritional knowledge and expertise to its DFACs, incorporating an increased focus on offering nutritional selections

that embodies lean proteins, omega-3 and Vitamin D and calcium integration.¹⁰⁶ These nutritional aspects are a part of a potential *healthstyle* integration into a Service wide nutritional goal that would compliment a health and wellness plan.

Today's educated and practiced nutritionists utilize modern science to understand the need to avoid a diet heavily concentrated in processed food, and to focus on blending a diet that incorporates fruits, vegetables and meats.¹⁰⁷ The *healthstyle* philosophy is then blended into this balanced diet to prevent stressors that are associated with diet compulsion and the fear of making unhealthy choices in nutrition.¹⁰⁸ Living the *healthstyle* way realizes that a strict adherence to healthy eating is unrealistic, and nutritional lapses due to working hours or locations can be balanced by other areas of healthy living (exercise).¹⁰⁹ Technology also compliments *healthstyle* through the ability to enter dietary consumption into online, phone or tablet applications that also pair with fitness trackers.¹¹⁰ This combination of consumption and activity data that is able to be seamlessly integrated into fitness tracking applications that are easily accessible on smartphones, computers and tablets.¹¹¹ This type of integration are all key parameters of establishing a Service fitness program that produces reliable data to ensure participation and validate long-term success.

Fitness

There is a direct correlation between following fitness and nutrition regimens. For example, the reduction of disease related illness and the need for care by health professionals. The 'Silver Sneakers' program is a government funded insurance related wellness plan, included in 65 Medicaid plans, providing fitness center access to 13,000 eligible locations.¹¹² A Department of Veterans Affairs study examined the reduction of chronic illness in 'Silver

Sneaker' participants that showed evidence suggests that those members who elected to join fitness center programs incurred lower overall health care costs, even among members with chronic illnesses.¹¹³ While Silver Sneakers is aimed at an older population, the correlation between fitness, exercise and the reduction of chronic illness is relevant to all populations.¹¹⁴ The CDC presents that participating in moderate-intensity aerobic activity, or a mix of aerobic and muscle-strengthening activities 3 to 5 times a week for 30 to 60 minutes can also increase mental health benefits.¹¹⁵

Participating in a fitness program that is focused on maintaining long-term fitness is critical to sustaining fitness throughout the tenure of a member's Service. Military Service members are subject to physical standards on their first day of service. Medical screening of the average Service member encompasses a medical and physical entrance physical exam performed by the personnel assigned to Military Entrance Processing Command.(MEPS)¹¹⁶ MEPS establishes a fitness baseline for all personnel entering military Services to be defined as prepared to train.¹¹⁷ Military training requires the successful completion of the current fitness Service test, which also requires physical exertion. Placing prominence on nutritional guidelines and exercise requirements, of a newly developed fitness program, would establish a long-term health and wellness lifestyle to the newest recruit.

Physical exercise is a key component of maintaining and building upon strength and fitness. Physical movement is required to increase muscle and cardiovascular strength, and both are essential elements of maintaining a healthy lifestyle. Fitness is a lifestyle, and is currently a mandated part of each Service branch's program that is designed to maintain a force that is ready to deploy.¹¹⁸ However, the existing programs fall short of a long-term strategy to maintain a

force that encompasses different sexes, body types and fitness abilities.¹¹⁹ A modernized fitness program would provide the basic exercise and activity regimen to benefit all Service member's physical abilities. The program would produce a stronger member who is ready to meet the physical requirements of the active duty lifestyle from special forces operations to military financial accounting.

Cardiovascular activities allow the individual to gain measurable health and wellness related goals such as lower blood pressure, reduced cholesterol and most importantly weight loss.¹²⁰ Cardiovascular fitness is one of the most important aspects of fitness to sustain a long-term health goal. In Dr. Kelly Starrett's book *Ready To Run: Unlocking Your Potential To Run Naturally*, he describes the body's natural ability to perform physical activities, specifically how the feet and legs are designed to run.¹²¹ Approaching fitness as a long-term lifestyle allows Service members the ability to develop sustainable daily and weekly fitness habits that fit into their lifestyle.

The basics of muscle strengthening and activity are important to a service-wide fitness program that would be designed to increase mobility and stamina. Cardiovascular fitness is defined as an elevation of heart rate while performing a physical activity, and relates to many activities including basketball, soccer, volleyball, distance or running.¹²² The key is how to prepare to engage in cardio calorie burning activities that have a positive effect on weight loss, while not inducing injuries. Dr. Starrett places emphasis on personal investment into preventing injury by focusing on hydration and warm-up exercises called *mobilizing*.¹²³ *Mobilization* is the act of warm-up movements that target the foot arch, Achilles tendon and buttocks.¹²⁴ These three physical attributes of the leg allow the Service member to properly engage the body before

imparting stress from physical exertion. Hydration provides the ability for muscle tissue surfaces to slide and glide and not stick like Velcro.¹²⁵

Mobilizing and hydration apply to any physical activities and would assist the Service member to increase agility as part of the daily long-term routine of a mandated program. The Service member would be able to participate in daily fitness routines with reduced physical injuries and increased cardiovascular stamina. These would then become part of achieving success in the physical fitness element of the mandated health and wellness plan.

ANALYSIS TO WELLNESS AND COST SAVINGS

The private sector has realized healthcare cost savings of three dollars to every one dollar spent.¹²⁶ Increasingly, larger corporations such as Pepsi and Devon Energy, have increased health and wellness plan enrollments and realized greater savings when targeting long-term tobacco cessation and diabetes prevention programs.¹²⁷ The DoD is better suited to realize more savings, as its primary workforce is comprised of active duty Service members who are physically screened to perform duties and encompass a much lower average age (30 years) as a workforce grouping.¹²⁸ Some elements of the mandated fitness program would incur upfront costs, to include a nutritional marketing campaign and *fitbit* device purchases, however the program's overall results should be realized in total long-term costs savings.

Nutritional Marketing

By producing and distributing a nutritional marketing campaign, the DoD can establish a new standard for health expectations while providing Service members the appropriate guidelines for eating with the intent of healthy living. The DoD provides nutrition, through

DFAC services, to an average of 1,000 daily meals per DFAC facility.¹²⁹ The DoD is able to provide the Service member with the both the nutrients required to achieve healthier eating choices and the information on what items to best choose. In 2012, the city of New York introduced a twenty million dollar nutritional guidance policy, aimed at savings one percent of a four billion dollar a year healthcare expenditure.¹³⁰ The city would recover twenty million dollars in savings versus expenditures in the estimated two years for full integration of its nutritional awareness program.¹³¹ In 2012, New York City Mayor Michael Bloomberg's nutritional plan to restrict the sale of sugary beverages to limit caloric intake to 25 calories per eight fluid ounces was met with considerable opposition.¹³² However, the plan's intent was to target obesity rates. While not mandated it shows that a nutritional marketing campaign was formulated to induce a lowered obesity rate and thus save the City of New York millions of dollars.

Fitness Participation

Placing the *fitbit* device into a mandated program would provide the Service member a personal investment in participating in the program. The *fitbit* device would incentivize the member to become more involved and active through the social medium that the *fitbit* attaches to a member's lifestyle.¹³³ In 2016, Oral Roberts University announced a mandatory policy for all Freshman students to wear and log daily activity as measured by the *fitbit flex*. Oral Roberts incorporated the device into its 'Whole Person Education' that is aimed at rounding health and fitness into its spiritual education.¹³⁴ Oral Roberts University maintains a fitness requirement as part of its academic syllabus, and by incorporating the *fitbit* into the student's lifestyle the university is modernizing its own established program to better engage the members.¹³⁵ With a

major educational institution incorporating the *fitbit* into the fitness curriculum, the DoD could also benefit from the social connotations that a *fitbit* encourages through increased participation.

Adopting a mandated fitness program that realizes cost savings would require the collection of real data that could be integrated to fitness and wellness based solutions. Emory University Health Center recently issued *fitbit* device trackers to all of its over 29,000 workers. Fully integrating the *fitbit* into the wellness program was a result of participant's positive feedback results and collected data demonstrating the link between *fitbit* tracking and fitness and participant's wellness gains.¹³⁶ During the Emory Health Center's 'Move More Challenge' 1,200 Emory Health employees uploaded *fitbit* data to an online tracker that monitored daily physical activity.¹³⁷ Participants were then able to see how minor lifestyle changes could effect major fitness progress as short term goals compounded into long-term results.¹³⁸ Over ninety-eight percent of participants would recommend the challenge to other employees and ninety-four percent of participants provided a "very satisfied" or "satisfied" sentiment towards the Move More Challenge.¹³⁹ The *fitbit* corporation is committed to providing its product to best assist in the execution of a corporate wellness program.¹⁴⁰ Integrating the *fitbit* device into a fitness program would provide fitness leaders the appropriate real-time data to assist members. The potential would then exist for fitness leaders to make tailored adjustments to better maximize the Service member's participation and gained results.

The integration of the *fitbit* device would maximize participation, and involves tapping into the Service member's emotional attachment towards fitness devices, by utilizing the *fitbit*'s role as an acceptable and fashionable way to track fitness in a fun and sociable manner. Tracking and logging quantitative data of daily steps logged, activity performed and heart rate engages the

individual and inspires personal goal setting to achieve greater levels of strength and activity.¹⁴¹ The *fitbit*'s technological connectivity serves a dual purpose, through it's ability to interface to a variety of smart phone applications and to serve as the medium linking the Service member's emotional commitment to the mandated fitness program.¹⁴² At an average retail cost per unit of \$99-\$129, the DoD would likely be able to negotiate a lower gross order unit cost.¹⁴³ With proper DoD pricing negotiation, the *fitbit* device would prove to be the most viable fitness tracking device based on per unit cost, durability and functionality.¹⁴⁴

RECOMMENDATIONS FOR A MORE EFFECTIVE FITNESS PROGRAM

Simplifying the fitness program reduces redundancy and increases effectiveness.

A mandated Service-wide fitness program will universalize the current commonality that exists from individual Service branch's programs. All Branches of the Services' missions involve maintaining an acceptable and measurable level of health and fitness. Each Service does not incorporate modern fitness and health methodology in existing programs and policies. There is a wealth of nutritional information and fitness techniques that fuels today's billion-dollar fitness industry.¹⁴⁵ Creating a singular mandated program will reduce the need for variants in physical fitness equipment at workout facilities and provide more interaction for inter-Service fitness tracking and testing. Currently military fitness instructions only provide guidance on how to execute a fitness evaluation, and not how to properly prepare to performance and achieve a passing fitness test score. By eliminating callisthenic testing measures from the fitness evaluation, Service members will be less likely to incur injury, due to improper preparation and movements that improperly stress joints and muscles while not truly evaluating the member's level of strength ability.¹⁴⁶

The fitness program will be streamlined to only evaluate running.

All Service branches currently require running as a common measure of fitness, and this should be the standard measure of cardiovascular fitness, evaluated as part of a standardized fitness program.¹⁴⁷ Running should remain the evaluated measure of a Service member's fitness. All Service members will still be required to participate in a mandatory annual physical fitness performance evaluation. The Service member will be required to submit to a height and weight measurement, and then perform a one mile timed run exercise. The timed run event will be conducted by the same standards and procedures that exist for today's individual branch fitness tests.¹⁴⁸ When combined with Dr. Starrett's *mobility* exercises and modern running techniques the Service member would be best prepared to achieve a passing fitness test. By eliminating the need to test calisthenics exercises the Services' would also save time when administering tests.

Incorporating modern mobility exercises increases long-term strength and fitness goals.

The existing Service branch fitness policies do not present the Service member with a fitness plan that prepares the member for the success. The modernized Service-wide fitness program would present modernized nutritional and fitness measures and exercises to best prepare the Service member for long-term success. Utilizing Dr. Kelly Starrett's philosophy of hydration and *mobilization*, Service members would perform a common core of daily exercises including "calf smash," "ankle pressure" and "hamstring roll."¹⁴⁹ These three core motions allow blood flow to reach core tissue and subsequently provide oxygen and cellular hydration required to prevent and reduce injury.¹⁵⁰ Dr. Starrett's philosophy and technique allows the athlete (Service member) to prepare the body to perform daily exercise as part of a long-term active lifestyle that better prepares the Service member to maintain strength and cardiovascular fitness.¹⁵¹ Daily

activity is a key aspect of a modified fitness plan and mobility exercises will enhance performance and be part of the measured plan documented by the inclusion of the *fitbit* fitness tracking device.

Cardiovascular stamina is an important part of the Service member's long-term health.

The existing fitness programs do not possess the proper training or cardiovascular regimen to maintain or increase a Service member's ability to increase cardiovascular stamina. Dr. Starrett's *mobility* exercises prepare the body to perform the natural motion of running.¹⁵² Running is a part of most physical activities, including most competitive sports. Dr. Starrett's mobility exercises prepare the human body to execute running in a more relaxed and "neutral" state that maximizes the fluid nature of the body's joints and muscles.¹⁵³ The scientific breakdown, of how to perform a neutral running motion, allows individuals who have struggled with injury or the perceived lack of ability to perform the running exercise as a part of a fitness program.¹⁵⁴ Dr. Starrett's analysis and methods will allow Service members to participate in running and running activities effectively and on a daily basis. Because of Dr. Starrett's experience with military training programs his techniques incorporate the military's needs and are aligned with developing a modernized fitness program.¹⁵⁵

The fitbit fitness tracking devices provides continuity and real-time fitness data.

Currently, there is no measurable data to reflect daily the daily fitness, strength or health level of the Active Duty Service member. The data that is presented results from the semi-annual administered pass or fail fitness tests. With the integration of the *fitbit* Service members would already be required to provide accomplished activity to fitness leaders, proving that they are

active participants in the fitness program. Service members would be required to log into an online program, upload weekly nutritional intake, mobility exercise and cardiovascular activity performed.¹⁵⁶ Because the *fitbit* can measure steps, activity and heart rate, tangible data related to how well an individual Service member contributed can be tracked and tabulated by fitness leaders.¹⁵⁷ This will allow fitness leaders to identify Service members needing additional guidance or support to regain maximum participation in the fitness program, and truly measure the level of fitness and participation of each Service member.

Incentives would maximize participation and performance.

There is little incentive for the Service member to achieve higher fitness goals while attempting to balance family life with irregular working hours and environments. Stressors for the average Service member include long working hours and the potential for deployable time away from home and family.¹⁵⁸ Combining work related stress with family stressors can result in depression and distraction.¹⁵⁹ In a similar manner to Jetblue Airway's ability to incentivize increased wellness plan participation, the military could incorporate healthy reward competitions into a long-term fitness program. Service members would be required to participate in the program, but would find incentivized measures to increase weekly or month performance measures. Data tracking would be uploaded from the Service member and then tracked and scored by designated fitness leaders. Incentives could include a variety measures, including liberty passes, parking spaces or similar rewards that incur limited costs but improve morale.

CONCLUSIONS

With the growing focus on reducing national debt and reducing costs, the DoD has a vested interest in targeting the fitness program to reduce costs and improve health. Physical fitness is a part of military life and directly effects the military Service member's ability perform under stressful conditions or to deploy in a variety of global locations. Technological resources are available to provide the tools required to make the program modernization a success. With modern fitness exercise regimens and methodology as a guide, the Service member would realize an increased ability to participate and excel in the fitness program. This increased participation will provide the long-term results that will benefit the health and wellness of all Service members and the DoD

The military Service branches have existing fitness policies and programs that establish testing. However, the programs do not define procedures that detail the fitness and health practices required to maximize testing scores. The Air Force, Army, Marine Corps and Navy combined cite the word "health" over 65 times throughout their respective Service Fitness Instructions, yet nowhere in any of the Service Instructions is a guide on how to achieve this undetermined level of health.¹⁶⁰ This lack of direction presents the need of a modernized fitness program that would incorporate nutrition, fitness and technological methodology to increase the Service member's fitness and health.

By extrapolating the data compiled by the Army 'Fueling Initiative' study the military can restructure its nutritional and fitness programs to better serve its Service members. In the Army's 'Fueling Initiative' study showed that Service members participating in year round fitness activities, while being supported by nutritional knowledge to properly maintain healthy eating habits were mentally and physically healthier. Reducing the need for medical care, injury

and long-term illness would be the ultimate goal of a modernized Service-wide fitness program. The results of such reductions would culminate in reducing cost elements in healthcare spending as related to the DoD annual budget.

Incorporating the *fitbit* device links social participation into a mandatory program. The *Emory Health* and Oral Roberts University programs demonstrate the benefits that the *fitbit* can provide towards increasing participation, results and tracking data to better modify health and wellness plans. When nutrition is combined with activity tracking (*fitbit*), a fitness program could be established to produce data that can be used to measure effectiveness and improve a modernized program. The benefits from improved Service member health and wellness will outweigh the cost to purchase the *fitbit* device.

The modernized program would provide for continual fitness and wellness monitoring, ensuring that the Service member is living a long-term healthy lifestyle. Improved health proves desirable for both the individual and as a cost saving goal of the program. The focus on including modern scientific nutritional and physical fitness theory from leading experts, modernizes the military's fitness program and provides the Service member with the ability to take charge of their health and wellness. Therefore, the Service member is better able to provide maximum participation and performance in their respective job. A nutritional awareness plan that targets the Active Duty lifestyle demanding lifestyle combined with a regular fitness plan, tracked by *fitbit*, that ultimately increases health, reduces healthcare costs and increases retention.

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(All notes appear in shortened form. For full details see the appropriate entry in the bibliography)

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